Introduction to Mtg about Possible LAr BE Contributions

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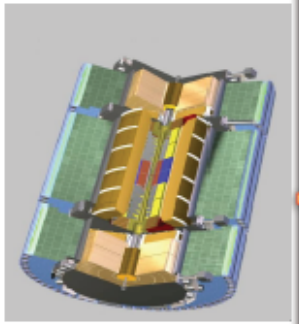
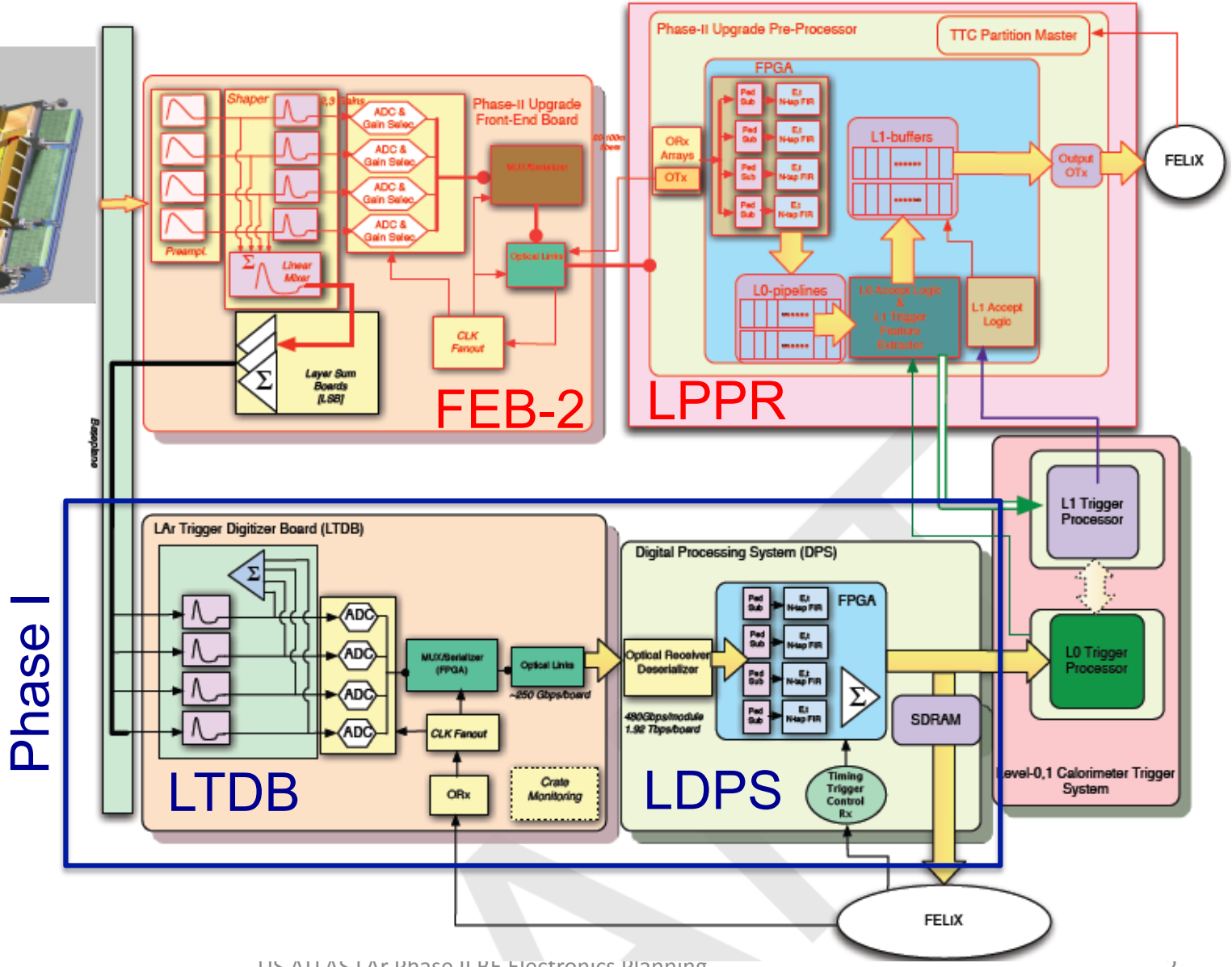
Phase II LAr Readout Architecture



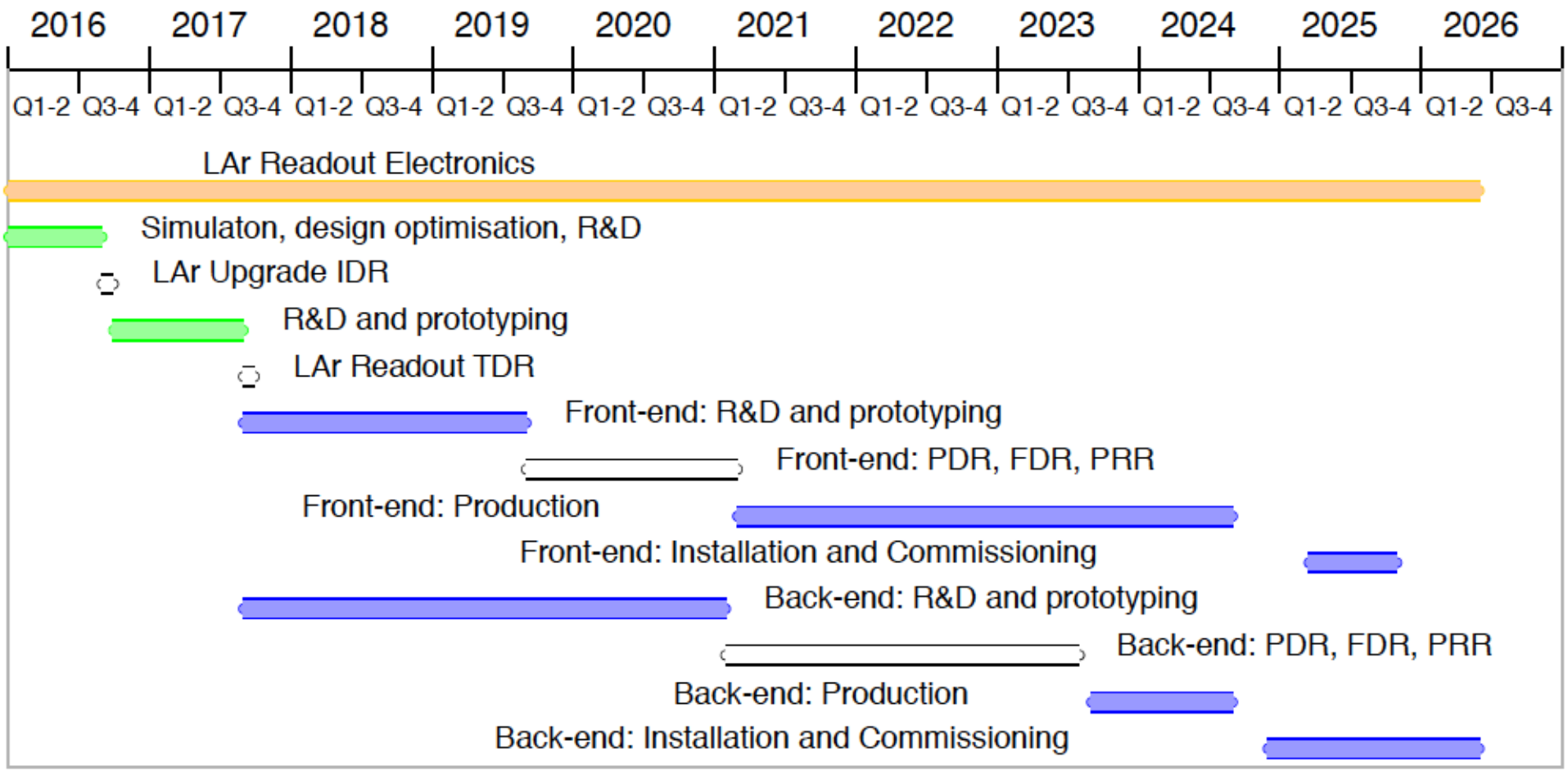


Some LAr Milestones

- Initial Design Review (IDR)
  - Q3 of 2016

- Technical Design Report (TDR)
  - Q3 of 2017

LAr Electronics Schedule (from SD)



LAr Electronics

- As in original construction, US groups proposing to take lead responsibility for LAr FE electronics, with deliverables including:
  - Rad-tol ASICs (preamp/shaper, ADC, serializer)
  - Optical link components
  - FEB 2

- BE construction responsibilities for Phase II are so far less advanced than for FE
  - Current RODs were built by European collaborators (despite PU design originating at Columbia), and considerable interest exists there for a similar role for the LPPR in Phase II
  - US groups are currently playing significant roles in Phase I LDPS, and will bring this expertise to development of BE electronics for Phase II
  - BE electronics not included in US cost/manpower estimates made in 2014, so need to start new planning exercise for this area

  - Boundaries between LAr and TDAQ become more blurry (certainly for L0/L1), so some coordination with TDAQ will be important

LAr Electronics Core Costs (from SD)

Table 16. CORE costs for the new LAr Calorimeter readout. *(Comment: LPPR and FELIX/TTC costs still in review.)*

WBS ID	Upgrade Item	All Cost Scenarios [kCHF]
3.1	**LAr Readout Electronics**	**31,394**
3.1.1	**LAr Front-end Electronics**	**20,427**
3.1.1.1	Front-end Boards (FEB-2)	9,743
3.1.1.2	Optical fibres and fibre plant	4,306
3.1.1.3	Front-end power distribution system	3,123
3.1.1.4	HEC LVPS	622
3.1.1.5	Calibration System	2,484
3.1.1.6	Shipping and Logistics	150
3.1.2	**LAr Back-end Electronics**	**10,967**
3.1.2.1	LAr Pre-processor Boards (LPPR)	10,212
3.1.2.2	Transition modules	122
3.1.2.3	ATCA shelves	66
3.1.2.4	ATCA switches	76
3.1.2.5	Server PC	22
3.1.2.6	Controller PC	8
3.1.2.7	FELIX/TTC System	460

News & Plans

Slide from Hal Evans

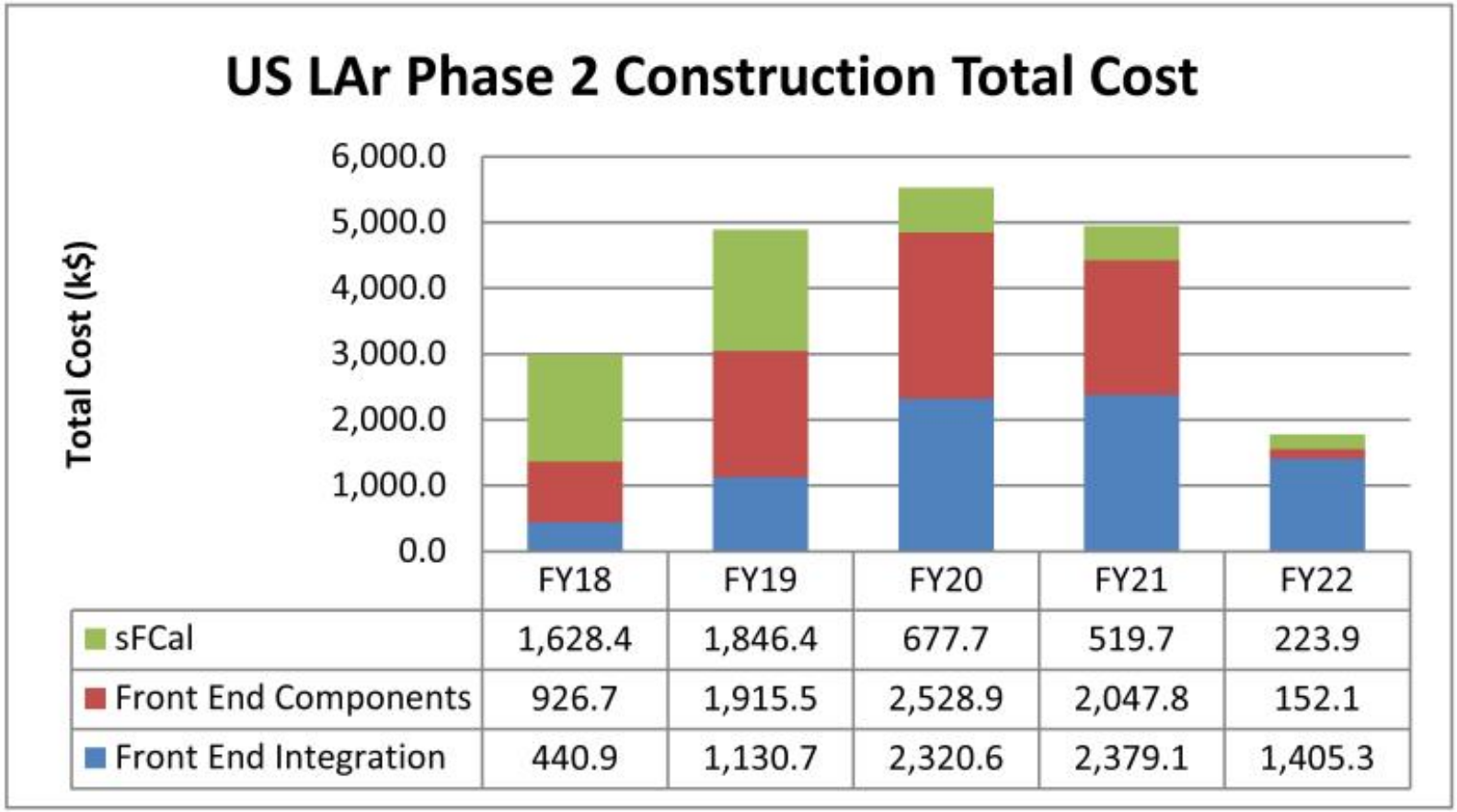
- Latest from the Agencies
  - DOE: Abid would like for us to have CD-0 in Jan. 2016
    - even though CMS is not yet ready
  - NSF: Fleming Crim very supportive of our MREFC bid
    - he likes our "electronics for triggering theme"
    - will submit our Science Case document to MREFC board on Oct. 6
    - we need to help him by building a package demonstrating NSF leadership
      - the CMS case is more difficult
- Moving Forward
  - Very important for us to demonstrate that we'll be ready for CD-0 at the upcoming JOG meeting
    - we understand the project/scope well enough for clear mission need
    - ==> (defensible) scope matched to funding guidance
  - NSF side: need to stay within ATLAS+CMS envelop ~$130M - $165M
    - specifically: do not fall below $130M cutoff under reviewer scrutiny

Status/Issues for US LAr Planning

- Cost estimate prepared in July 2014 includes only sFCAL and FE electronics
  - Working to update these and adapt to new WBS + schedule
- Given the considerable US interest and expertise in the BE electronics, which was not included in previous US costing exercise, need to move aggressively to defined proposed US scope and required resources for LAr BE electronics
- The main goal of this mtg is to give the interested groups the opportunity to express their interests and proposed contributions, and to start to develop a coherent plan for overall US involvement in the LAr BE electronics
  - Start with "wish list"
  - Like all other Phase II upgrade efforts, proposed tasks will have to be placed on prioritized list for US ATLAS, and decisions made to match overall funding guidance

Backup Slides

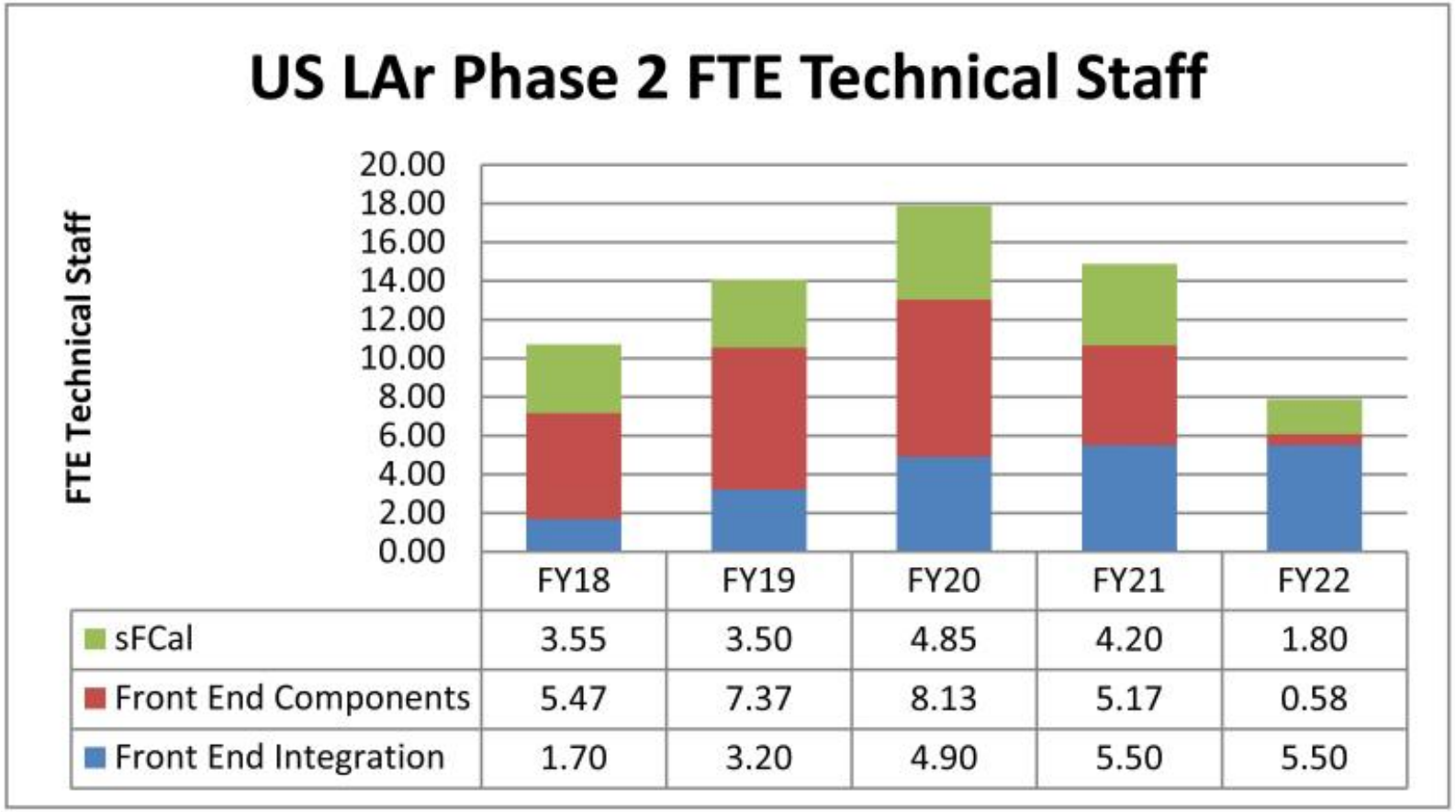
From July 2014 Planning Exercise



	FY18	FY19	FY20	FY21	FY22
sFCal	1,628.4	1,846.4	677.7	519.7	223.9
Front End Components	926.7	1,915.5	2,528.9	2,047.8	152.1
Front End Integration	440.9	1,130.7	2,320.6	2,379.1	1,405.3

Item	Cost (k$)
sFCal	4,896
Front End Components	7,571
Front End Integration	7,677
Total	**20,144**

From July 2014 Planning Exercise



	FY18	FY19	FY20	FY21	FY22
sFCal	3.55	3.50	4.85	4.20	1.80
Front End Components	5.47	7.37	8.13	5.17	0.58
Front End Integration	1.70	3.20	4.90	5.50	5.50

Item	Tech FTE
sFCal	17.9
Front End Components	26.7
Front End Integration	20.8
Total	**65.4**

Phase II TDAQ Architecture